REMARKS

The foregoing amendment to the specification is intended to place the application in condition for allowance. In view of this amendment and the following reasoning for allowance, the applicants hereby respectfully request further examination and reconsideration of the subject application.

1. The Section 101 Rejection of Claims 25 and 28

Claims 25 and 28 were rejected under 35 USC 101 as being directed toward non-statutory subject matter. Specifically, the Examiner stated that Claim 25,

> "recites "A computer-readable storage medium". There is no clear definition regarding the computer readable storage medium in Specification. The closest one is "computer storage medium" in [0022] of Specification, which can be "any other media that can be used to store the desired information and that can be accessed by the computing device", which could be a non-transitory tangible media or transitory propagating signal *per se*. *See* MPEP 2111.01. The transitory propagating signal is non-statutory subject matter".

In response, the applicants have amended the sentence in numbered paragraph [0022] previously reading "Computer storage media include, but is not limited to, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, digital versatile disks or other optical disk storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, and any other medium that can be used to store the desired information and that can be accessed by the computing device" to now read "For example, computer-readable storage media can be RAM, ROM, EEPROM, flash memory, CD-ROM, digital versatile disks or other optical disk storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices". As such the phrase "any other media that can be used to store the desired information

and that can be accessed by the computing device" that the Examiner was construing as being directed to non-statutory subject matter has been removed. In addition, the term "computer storage media" was changed to "computer-readable storage media" to provide consistency in terminology between the claims and the specification. Note that support for this change is found in numbered paragraph [0023] where it is stated that "The term computer-readable media as used herein includes...storage media".

To further preclude the specification from being construed such that the computer-readable storage medium recited in the rejected claims could be non-statutory subject matter, the applicants have added the term "physical" in the sentence now reading "Computer-readable storage media include volatile and non-volatile, removable and non-removable physical media implemented in any method or technology for storage of information such as computer-readable instructions, data structures, program modules, or other data." In addition, the phrase "storage media include, but is not limited to" was changed to read "storage media can be", and the phrase "or other memory technology" was removed, for the same reason.

Thus, it is believed the claimed computer-readable storage medium clearly falls within a statutory class and that the claims are distinguished from the communication medium defined in the specification and any non-statutory subject matter. As such, the rejected claims are patentable under 35 USC §101. Accordingly, it is kindly requested that the rejection of Claims 25 and 28 be reconsidered.

2. Rejection of Claims 1, 16-20 and 28 Under 35 USC §103(a)

Independent Claims 1 and 16 were rejected under 35 USC §103(a) as being unpatentable over Chow et al., U.S. Patent No. 6,771,966 in view of Ayyagari et al., U.S. Patent Application Publication No. 2002/0101822 (hereinafter Ayyagari), and further in view of Steer et al., U.S. Patent Application Publication No. 2004/0157613 (hereinafter Steer). It was contended in the Office Action that Chow teaches all the elements of the rejected claims with the exception of a contention-based MAC, and the adding and selecting of new

nodes as potential access points. However, it is further contended these missing elements are respectively taught in Ayyagari and Steer. Thus, it was concluded that it would have been obvious to incorporate the teachings of Ayyagari and Steer into Chow to produce the applicants' claimed invention. In addition, independent Claims 17-20 and dependent Claim 28, were rejected under 35 USC §103(a) as being unpatentable over Chow in view of Ayyagari and Steer for the same reasons as Claims 1 and 16, and further in view of Layson et al., U.S. Patent No. 6,405,213 (hereinafter Layson). It was contended in the Office Action that the Chow-Ayyagari-Steer combination teaches all the elements of the rejected claims with the exception of iterating through a set of time intervals. However, it is further contended this element is taught in Layson. Thus, it was concluded that it would have been obvious to incorporate the teachings of Layson into the Chow-Ayyagari-Steer combination to produce the applicants' claimed invention. The applicants respectfully disagree with these contentions of obviousness.

The applicants claim among other things, "**determining placement locations of access points** in a network...the network being **a multi-hop wireless mesh network...comprising nodes and links between the nodes...iterating through each access point in the set of potential access points to be opened, in each iteration...selecting a test access point, from the set of potential access points to be opened, to be added to a set of currently open access points; and computing node demands satisfied if the test access point is added to the set of currently open access points; selecting, as a new access point for the network, the test access point from the set of potential access points having a maximum computed value of the node demands satisfied when opened together with access points in the set of currently open access points**; adding the selected new access point to the set of currently opened access points" (as exemplified in Claim 1). Independent Claims 16-20 contain similar language. For convenience, the foregoing bolded features will sometimes be referred to as the access point location determination features in the arguments to follow.

The Chow-Ayyagari-Steer and Chow-Ayyagari-Steer-Layson combinations do not

teach the access point location determination features. None of the cited references even suggests a scheme to determine locations for access points in "a multi-hop wireless mesh network...comprising nodes and links between the nodes". Granted, the Examiner contends that Chow teaches the claimed access point location determination features. However, this is not the case. Rather, the Chow reference teaches a scheme for optimizing the link topography between nodes with prescribed locations. These nodes can be existing nodes with known locations, or planned nodes whose location has been decided upon and known, or potential nodes that may be activated in the future at a particular location (see Col. 11, lines 1-3). However, regardless of the type of node, the location is known and does not change during the link determination process. In fact, the node locations (existing or otherwise) must be known in advance or the Chow scheme cannot identify the optimum link configurations. It is not stated in Chow how the existing or planned node locations where determined. It was described that potential node sites would be selected as follows:

> "The inclusion of potential future nodes according to the preferred embodiment provides for future growth. **Preferably the potential future node sites include all presently identifiable node sites meeting particular criteria**. For example, where the communication network is to provide high bandwidth data communication, such as shown and described in the above referenced patent application entitled COMMERCIAL NETWORK TOPOLOGIES UTILIZING POINT TO POINT RADIOS, all known locations with a service region meeting a selected threshold criteria, **such as any office building having six T1 subscribers located therein**, may be identified as potential future nodes. Of course other criteria may be utilized in addition to or in the alternative to the above. For example, **buildings of particular sizes, companies having particular numbers of employees, businesses conducting particular types of business, locations of expected future growth (although currently not meeting a selected criteria or even having any building or infrastructure located thereon), and the like may be utilized as criteria to identify potential future node**

sites".

Thus, the section of potential node locations is based on the geography, or the number or type of potential users, of the site. The potential node locations are clearly not selected using the claimed access point location determination features.

More particularly, the Examiner contends in the Office Action that the claimed iteration through each access point in the set of potential access points to be opened is suggested by a statement in Chow at Col. 9, lines 66-67. The full paragraph containing this statement reads:

> "Currently **when deploying multiple links**, a highly skilled engineer performs **a manual process to provide the best set of radio links or radio topology once the nodes and radio sites have been identified**. In the first step, the designer enters radio site location into a RF tool such as PATHLOSS, EDX, etc. These RF tools identify the RF properties of the radio site locations. **Next, the designer, based on their experience, places the radio links, the links which join the radio sites, into the system. Radio links are selected to minimize the interference between other radio links**. Next, RF tools performance computations are run which determine the performance of each of the radio links and the mutual interference levels between radio links. **Once the performance and interference are identified the engineer decides which links are acceptable and which links should be eliminated from further consideration.** Once the unacceptable links and other links selected by the engineer are eliminated, **the RF tools performance computation are run again to determine the overall characteristics of the radio topology. This iterative process is repeated until the engineer is satisfied with the layout**". (Col. 9, lines 47-67)

Thus, the cited statement in Chow refers to an engineer picking, evaluating and eliminating unacceptable links between the node locations. It has nothing to do with iterating through

potential access point locations, as claimed by the applicants. In fact, it is clearly stated that the link selection iteration process in Chow does not start until "the nodes and radio sites have been identified"—a process which does not involve the claimed access point location determination features as shown above.

Further, the Examiner contends in the Office Action that the claimed "selecting, as a new access point for the network, the test access point from the set of potential access points having a maximum computed value of the node demands satisfied when opened together with access points in the set of currently open access points" is taught by the Chow link selection (Col. 10, line 64). However, selecting links between nodes in not the same as selecting an access point. A link is not an access point. Granted, the examiner equates an access point to a node. Even if for argument sake this is assumed to be the case, the applicants respectfully submit that identifying nodes and identifying links between the nodes are two distinct and separate processes and cannot be considered equivalent. By definition, nodes and links are different. Nodes are points in a network where two paths intersect. A node can be realized physically in the form of a terminal, building, computer, PDA, cell phone, or router among several possible computing devices. In contrast, a link cannot. A link is what connects two nodes of a network. In view of the foregoing, the Office Action's assertion of equivalency between adding links and adding nodes is improper.

Still further, the Examiner asserts in the Office Action that the statement in Chow at Col. 9, lines 64-66 reading "the RF tools performance computation are run again to determine the overall characteristics of the radio topology" suggests the claimed access point location determination features by contending the radio topology includes access points. However, the radio topology referred to in Chow is restricted to link configuration among nodes having a fixed location. It does not include a reconfiguration of the node locations. This is made evident by the statement in Chow at Col. 9, lines 47-50 which read:

> "Currently **when deploying multiple links**, a highly skilled engineer performs **a manual process to provide the best set of radio links or radio topology**

once the nodes and radio sites have been identified.

Clearly, this statement shows that the locations of the nodes must be known before the engineer performs a process of providing the best radio topology. If the determination of the node locations was part of this process, they would not need to be known before hand. Nothing in Chow teaches or suggests its link optimization scheme results in node locations different from those employed to perform the optimization. The node locations simply do not change. Clearly, if the node locations do not change, Chow cannot be said to teach the claimed access point location determination features.

In order to deem the applicant's claimed invention unpatentable under 35 USC 103, a prima facie showing of obviousness must be made. To make a prima facie showing of obviousness, all of the claimed elements of an applicant's invention must be considered, especially when they are missing from the prior art. If a claimed element is not taught in the prior art and has advantages not appreciated by the prior art, then no prima facie case of obviousness exists. The Federal Circuit court has stated that it was error not to distinguish claims over a combination of prior art references where a material limitation in the claimed system and its purpose was not taught therein (*In Re Fine*, 837 F.2d 107, 5 USPQ2d 1596 (Fed. Cir. 1988)).

In this case, the cited combination does not teach the claimed access point location determination features. Accordingly, no prima facie case of obviousness can be established in accordance with the holding of *In Re Fine*. This lack of a prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103(a) over Chow in view of Ayyagari and Steer in the case of Claims 1 and 16, and over Chow in view of Ayyagari, Steer and Layson in the case of Claims 17-20 and 28. It is, therefore, respectfully requested that these claims be allowed based on the previously-quoted non-obvious claim language.

3. Rejection of Claims 3-8 and 10-15 Under 35 USC §103(a)

Claims 3 and 10 were rejected under 35 USC §103(a) as being unpatentable over Chow in view of Ayyagari and Steer, and in further view of Bush et al., U.S. Patent Application Publication No. 2004/0250128 (hereinafter Bush). Claims 4, 7-8, 11 and 14-15 were rejected under 35 USC §103(a) as being unpatentable over Chow in view of Ayyagari and Steer, and in further view of Matsunaga et al., U.S. Patent No. 5,440,675 (hereinafter Matsunaga). And finally, Claims 5, 6, 12 and 13 were rejected under 35 USC §103(a) as being unpatentable over Chow in view of Ayyagari and Steer, and in further view of McGlade et al., U.S. Patent No. 6,411,598. It was contended in the Office Action that the Chow-Ayyagari-Steer combination teaches all the elements of the rejected claims with the exception of a various features alleged to be taught in Bush, Matsunaga and McGlade. Thus, it was concluded that it would have been obvious to incorporate the teachings of Bush, Matsunaga and McGlade into the Chow-Ayyagari-Steer combination to produce the applicants' claimed invention. The applicants respectfully disagree with these contentions of obviousness.

The applicants claim among other things, "A method for **determining placement locations of access points** in a network...the network being **a multi-hop wireless mesh network...comprising nodes and links between the nodes...iterating through each access point in the set of potential access points to be opened, in each iteration...selecting a test access point, from the set of potential access points to be opened, to be added to a set of currently open access points; and computing node demands satisfied if the test access point is added to the set of currently open access points; selecting, as a new access point for the network, the test access point from the set of potential access points having a maximum computed value of the node demands satisfied when opened together with access points in the set of currently open access points**; adding the selected new access point to the set of currently opened access points" (as exemplified in Claim 1). Independent Claim 16 contains similar language. For convenience, the foregoing bolded features will sometimes be referred to as the access point location determination features in the arguments to follow.

The Chow-Ayyagari-Steer-Bush, Chow-Ayyagari-Steer-Matsunaga and Chow-Ayyagari-Steer-McGlade combinations do not teach the access point location determination features. None of the cited references even suggests a scheme to determine locations for access points in "a multi-hop wireless mesh network...comprising nodes and links between the nodes". Granted, the Examiner contends that Chow teaches the claimed access point location determination features. However, as shown previously this is not the case. Rather, the Chow reference teaches a scheme for optimizing the link topography between nodes with prescribed locations. These nodes can be existing nodes with known locations, or planned nodes whose location has been decided upon and known, or potential nodes that may be activated in the future at a particular location. However, regardless of the type of node, the location is known and does not change during the link determination process. In fact, the node locations (existing or otherwise) must be known in advance or the Chow scheme cannot identify the optimum link configurations.

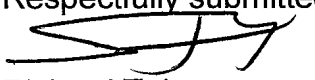
Accordingly, the cited combinations do not teach the claimed access point location determination features. As such, no prima facie case of obviousness can be established in accordance with the holding of *In Re Fine*. This lack of a prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103(a) over Chow in view of Ayyagari and Steer, and further in view of Bush in the case of Claims 3 and 10, over Chow in view of Ayyagari, Steer and Matsunaga in the case of Claims 4, 7-8, 11 and 14-15 and over Chow in view of Ayyagari, Steer and McGlade in the case of Claims 5, 6, 12 and 13. It is, therefore, respectfully requested that these claims be allowed based on the previously-quoted non-obvious claim language.

4. Summary

The applicants gratefully acknowledge the allowance of Claims 23 and 24. Additionally, in view of the amendments and arguments set forth above, the applicants respectfully submit that the remaining claims are in condition for allowance as they are patentable subject matter and not obvious over the cited art. Accordingly, it is respectfully requested that the rejection of Claims 1, 3-8, 10-20, 23-25 and 28 be reconsidered. In

addition, allowance of all these claims at an early date is courteously solicited.

Respectfully submitted,



Richard T. Lyon
Registration No. 37,385

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399
Direct Tel. No. (425) 707-9382